

Customer No.: 31561
Application No.: 10/605,357
Docket No.: 11535-US-PA

AMENDMENTS

In The Claims

- 5 1. (original) A method of detecting defects of a semiconductor device, said semiconductor device comprising a substrate, a gate, a source region, a drain region, a plug, an insulating layer, and a conducting line, said plug electrically connected with one of said source region and said drain region and located above a portion of said gate, at least a defect existing between said plug and said gate, said method comprising:
- 10 polishing said semiconductor device until said plug above said gate is substantially removed;
- cleaning said semiconductor device;
- removing said insulating layer between said gate and said plug; and
- detecting said defect between said plug and said gate.
- 15 2. (original) The method of detecting defects of a semiconductor device of claim 1, wherein said polishing step further comprises polishing said semiconductor device to partially expose said gate.
3. (original) The method of detecting defects of a semiconductor device of claim 1, wherein said cleaning step comprises:
- 20 using deionized water to clean said semiconductor device; and
- drying said semiconductor device.
4. (currently amended) The method of detecting defects of a semiconductor device of claim 1, wherein the step of removing said insulating layer~~[[said removing step]]~~ comprises:

Customer No.: 31561
Application No.: 10/605,357
Docket No.: 11535-US-PA

performing a wet etching process[~~(;and)~~], or

performing a dry etching process.

5 5. (currently amended) The method of detecting defects of a semiconductor device of claim 4, wherein a material of said insulating layer comprises silicon dioxide, and an etchant of said wet etching process comprises HF.

6. (original) The method of detecting defects of a semiconductor device of claim 4, wherein said dry etching process comprises a reactive ion etching process.

7. (original) The method of detecting defects of a semiconductor device of claim 4, wherein said detecting step comprises using a scanning electron microscope to
10 detect said defect.

8. (currently amended) A method of detecting defects of a semiconductor device, said semiconductor device comprising a conductive line on a substrate, an insulating layer over said conductive line and said substrate, a plug formed in said insulating layer and connected to said substrate, and an interconnection layer over said
15 insulating layer, wherein a portion of said plug is located over said conductive line and a defect exists between said plug and said conductive line~~[at least two adjacent conducting layers and an insulating layer, said insulating layer being disposed between said two adjacent conducting layers, a defect existing between said two adjacent conducting layers]~~, said method comprising:

20 polishing said semiconductor device until said portion of said plug located over said conductive line is removed~~[to partially expose said two adjacent conducting layers]~~;

removing said insulating layer between said plug and said conductive line
~~[between said two adjacent conducting layers]~~; and

Customer No.: 31561
Application No.: 10/605,357
Docket No.: 11535-US-PA

detecting said defect [~~between said two adjacent conducting layers~~].

9. (original) The method of detecting defects of a semiconductor device of claim 8, further comprising cleaning said semiconductor device after said polishing step and before said removing step.

5 10. (original) The method of detecting defects of a semiconductor device of claim 9, wherein said cleaning step comprises:

using deionized water to clean said semiconductor device; and
drying said semiconductor device.

10 11. (currently amended) The method of detecting defects of a semiconductor device of claim 8, wherein [~~said removing step~~] said step of removing said insulating layer comprises a wet etching process.

12. (currently amended) The method of detecting defects of a semiconductor device of claim 8, wherein [~~said removing step~~] said step of removing said insulating layer comprises a dry etching process.

15 13. (original) The method of detecting defects of a semiconductor device of claim 12, wherein said dry etching process includes a reactive ion etching process.

14. (currently amended) The method of detecting defects of a semiconductor device of claim 8, wherein said detecting step comprises using a scanning electron microscope to detect said defect.

20